REMARKS

After entry of the foregoing amendments, new claims 21-52 of the application are pending. Original claims 1-20 are cancelled.

Specification

The Specification is amended to add a cross reference to related applications. In addition, the Specification is amended to address objections made by the Office with regard to the Parent application. The amendments are the same as those made in the Parent application and were found by the Office to be sufficient to allow the Parent application.

In the Parent application, the specification was object to as failing to provide proper antecedent basis for five items.

1. The slightly larger central opening in claim 21: Claim 21 has been written to describe the bottom wing as "having a central opening for the exhaust airstream from the ducted fan and said central opening extending rearward and being larger than the circular opening in the top wing." This is supported in the specification in the first full paragraph on page 20 which provides that "the midriggers lie in parallel to the fuselage and air flow, and are placed longitudinally tangent to the outer radius of the exbedded ducted fan inlet shroud where it is furtherest from the fuselage on both side of the jyrodyne. They are canted 7°, with the top edge in board of the bottom edge to match the divergent thrust cone angle." This slope to the midriggers which are mounted to the edges of the exbedded ducted fan indicates that the hole in the bottom wing must be larger than the hole in the top wing.

2. The bellmouth radius of from 0.1 to 0.3 times the ducted fan diameter: Paragraph two of page 9 of the specification provides that "the longer lip radius of the bellmouth on the

inlet lip of the ducted fan shroud of the jyrodyne extends to as much as 30% of the duct diameter." Claim 28 has been written to describe the ducted fan shroud bellmouth as "having a radius of up to 0.3 times the ducted fan diameter." In addition, the specification in paragraph 2 on page 9 has been amended to describe the ducted fan shroud bellmouth as having a radius ranging from 0.1 to 0.3 times the ducted fan diameter.

3. The pusher propeller of claim 36: New claim 36, like original claim 5, provides that the propeller of the claimed aircraft can be a pusher propeller. The claims and specification both describe a tractor propeller as being a suitable propeller for the aircraft. The specification is amended to describe suitable embodiments of the invention as including either a tractor propeller or a pusher propeller so that the claims and the specification are consistent. The amended paragraphs of the specification are set forth hereinabove.

4. The turbo fan jet engine of claim 40: New claim 40, like original claim 6, describes the horizontal propulsive means as a "turbo fan jet engine." Applicant has amended the fifth paragraph of page 36 of the specification to describe the turbo fan engine as a turbo fan jet engine to be consistent with new claim 40.

5. The turbo prop engine of claim 41: New claim 41, like original claim 7, describes an embodiment of the aircraft as including a turbo prop jet engine. Applicant has amended the fourth paragraph of page 36 of the specification to describe the turbo prop engine as a turbo prop jet engine to be consistent with new claim 41.

Applicant submits that with the foregoing amendments, the specification provides proper antecedent basis for the claimed subject matter and removal of the objection to the specification

as failing to provide proper antecedent basis for the claimed subject matter is respectfully requested.

Claim Objections

Original claims 1-20 were objected to because in claim 1, the "ducted fan bellmouth" and "horizontal stabilizer" lacked antecedent basis. The new claims have been written to provide proper antecedent basis within the claim for both of these elements.

Claim Rejections-35 U.S.C. §112, lst¶

Original claims 1-20 were rejected under 35 U.S.C. §112, lst ¶, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Each of the grounds for rejection under §112, lst ¶, is addressed in series below with regard to the new claims 21 - 52.

1. **In claim 1, line 14,** what is "longitudinal tangent" line?: Claim 30 has been written to describe the midriggers as "positioned longitudinally tangent to the outer radius of the large circular opening in the center of said top wing." This physical relation between the midriggers and the large circular opening in the center of the top wing is illustrated in Fig. 13 of the application and is explained in the second paragraph on page 20 of the specification. Furthermore, the term longitudinal is used elsewhere in the specification to mean longitudinal to the fuselage. See the third paragraph of page 32 of the specification. Thus, longitudinal as used to describe the tangent line means longitudinal with respect to the fuselage.

The term tangent is defined in Webster's 7th New Collegiate Dictionary, page 900 as "a straight line that is limiting position of a secant of a curve as the variable point approaches the

fixed point." The term longitudinal refers to the longitudinal axis of the aircraft. This is a common expression and Applicant submitted in the Parent application an excerpt from "Sport Aviation" and article entitled "A Handy Fixture Stand." Both of these articles show use of the term "longitudinal" in a manner consistent with Applicant's use in the new claim 30.

Based on the foregoing, Applicant respectfully submits that the use of the expression "longitudinally tangent" in new claim 30 is supported by the specification and described in such a way that one skilled in the art to make and use the invention,.

2. In claim 29, what is the center of gravity adjustment pitch deflectors?: The center of gravity adjustment pitch deflectors referenced in new claim 29 are described extensively in the specification section titled "Center of Gravity Adjustment Pitch Deflectors." This section starts at the fourth paragraph on page 30 of the specification and continues through most of page 31. See in particular, paragraphs 4 and 5 on page 31 of the specification. Applicant respectfully submits that the structure and function of the gravity adjustment pitch deflectors are sufficiently described in Applicant's specification to enable one skilled in the art to make and use them.

3. In claim 29, what are the three to four midsection anti-torque air foils?: Claim 29 is written to describe the anti-torque air foils as anti-torque air foil-shaped vanewings. The vanes and the vanewings are two different elements in claim 29 and they are described as such in the specification in paragraphs 4 and 5 on page 14 and paragraph 6 on page 15. With this amendment, Applicant submits that the air foil-shaped vanewings are described sufficiently in the specification to enable one skilled in the art to make and use the invention.

4. In claim 29, how could the anti-torque air foils produce thrust?: The "vanewings" produce thrust in a manner identical to a wing producing lift. With a wing, low pressure over the

top of the wing produces a lift vector upwards. Since the vanewings are mounted vertically instead of horizontally, the vector produces a force directed horizontally.

The engine torque of about 200 ft.-lbs. is multiplied by the ratio of speed between the engine and the rotor to about 900 foot-lbs. of torque applied at the rotor. This is converted into lift and drag and must be compensated for, or the jyrodyne would just spin in the opposite direction of the rotor. The vanewings produce a horizontal thrust at some distance from the rotor axis. The thrust times the distance from the rotor axis produces ft-lbs. of torque which work in the opposite direction of the torque from the engines, and cancels it out. The "aileron" type extension on the bottom of the vanewings are for trim purposes.

Accordingly, it can be seen that one of ordinary skill in the art is enabled by the specification to make and use the vanewings.

5. In claim 29, how could the vanes be mounted outside the jyrodyne fuselage while inside the diameter the ducted fan?:

Referring to Fig. 16, this illustrates the location of the vanes. The diameter of the duct is 10 feet, while the fuselage diameter is about 5 feet. The vanes are mounted parallel to the longitudinal axis of the jyrodyne, approximately 4 feet away from the longitudinal centerline of the jyrodyne fuselage. This places them about 1.5 feet outside the outer edge of the jyrodyne fuselage, while about 1 foot inside the diameter of the ducted fan. This is an exbedded ducted fan, not an imbedded ducted fan.

Accordingly, Applicant respectfully submits that one of ordinary skill in the art would understand, based on the specification, how the vanes could be so mounted.

6. In claims 32, 36, 40 and 41, how could each respective power plant could produce the pitch up experienced in the ducted fan aircraft in transition from VTOL to convention flight?:

To explain this, conditions in three separate flight regimes are defined.

The first one is conventional flight, where the jyrodyne aircraft is flying forward using wing lift. The second is the early part of transitional flight, where the jyrodyne aircraft is moving forward, but the power is still directed to the rotor and has not yet been transferred to the propeller. The third case is in the transition from conventional flight to VTOL flight.

In the first case, the pitch up of the aircraft is caused by the power plants only when the powerplant output is reduced. In claims 32, 36, 40 and 41, the power plant produces a horizontal, forward thrust vector which is above the aerodynamic centerline of the aircraft. Since it is above the aerodynamic centerline of the aircraft, increased power from the powerplants will produce a pitch down when the throttle or power output of the powerplant is increased, and a pitch up when the powerplant output is decreased.

For the second case of transitional flight, the tendency and reasons for the jyrodyne aircraft to pitch up during the transition from VTOL to horizontal flight are described in detail in the specification in detail on pages 12 and 13, and in particular in the first paragraph on page 13. These are all due to the interaction of airflow into the ducted fan with adjacent free air flowing nearby. Powerplant output changes have an impact on pitch up tendencies for this case. At a transitional forward speed of 15 miles per hour, approximately 25% of the lift is achieved from the wings, and 75% from the ducted fan and its associated bellmouth. The lift from the bellmouth changes as the aircraft accelerates. It becomes greater at the front edge, and less at the rear edge. At the worst case condition, lift at the front edge doubles, and lift at the rear edge

goes to zero. Since the bellmouth produces about 50% of the total ducted fan lift, a significant pitch up of the jyrodyne can occur.

For the 15 mph case above, at higher power settings, the ducted fan airflow will increase, sucking in more air at both the front and rear of the bellmouth. At the front, the airflow velocity will increase, producing more lift. At the rear, the location of the zero airflow point will move rearward and get larger in area, resulting in decreased lift. Thus, an increase in powerplant output will increase the pitch up tendency in transitional mode.

For the third case, the combination of a powerplant reduction from conventional flight, and transfer of the power to the rotor can create a situation where two separate effects both produce pitch up. It is for this reason that the jyrodyne has a canard, a central third of the elevator linked to throttle position, an oversized horizontal stabilizer and pitch deflectors. The combination of all of these features are used to overcome the powerful pitch effect of the combination of a powerplant reduction in convention flight and a transfer of power to the rotor system while in conventional flight.

Based on the foregoing, Applicant respectfully submits that one of ordinary skill in the art is enabled by Applicant's specification.

Claim Rejections 35 U.S.C. §112, 2nd Paragraph

Original claims 1-20 were rejected as failing to define the invention in the manner required by Section 112, 2nd paragraph. New claims 21-52 have been written to put the claims in clear and definite form as required by Section 112, 2nd paragraph. The particular objections raised by the Examiner are addressed in series below.

1. The Examiner objected to the expression "bicycle-type.": This term is not used in the new claims.

2. The Examiner asked what is being mounted to the rear and above the top wing?: The horizontal stabilizer is mounted to rear and above the top wing as is clearly described in claim 1. In a preferred embodiment, the "T" tail includes the central tailfin, the horizontal stabilizer, and the elevator attached to the horizontal stabilizer.

3. The Examiner objected to the description of the relative surface areas: In the new claims, Applicant has provided a new description of the relation between the surface areas of the central tailfin and two side fins, the biplane wing surface area, the movable rotor surfaces, and the horizontal stabilizer to more clearly express these relationships. Specifically, Claim 22 now describes the horizontal stabilizer as having a surface area in a range of from 25 to 60% of the biplane wing surface area. Claim 23 describes the central tailfin as having a total surface area ranging between 25% to 60% of the biplane wing surface area. Claim 24 describes the rudder mounted in the central tailfin as having a total surface area ranging between 25% to 60% of said total surface area of the central tailfin. Claim 26 describes the central tailfin and two side fins as having a total surface area from 25% to 60% of the biplane wing surface area. And, claim 27 describes the total surface area of the three rudder surfaces as ranging between 25% and 60% of the total surface area of the central tailfin and the two side fins.

Substantively, the description in the new claims is the same as in the original claim 1, but it is more clearly described using consistent terminology.

4. The Examiner questioned whether the exbedded ducted fan identified in certain dependent claims is the same fan as in original claim 1 or an additional fan: Only one exbedded

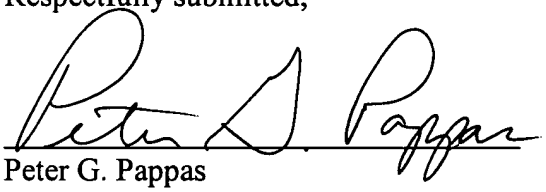
ducted fan is identified in the new claims and it is introduced in claim 21. Redundant references to the exbedded ducted fan in the new dependent claims have been deleted.

5. The Examiner questioned whether the central third of the elevator is in the slip stream: Applicant confirms that it is the central third of the elevator in the slip stream as described more clearly in new claim 33 and in the specification.

6. The Examiner questioned what does "it" refer to in original claim 8, line 9: The new claims have been amended to delete the "it" reference. "It" was meant to refer to the bottom wing. The new claims now expressly refer to the bottom wing where applicable.

The allowance of all claims is respectfully requested. **Applicant's attorney respectfully requests that the Examiner call the undersigned attorney at (404) 853-8064 if there are any issues which can be resolved by a telephone conference or an Examiner's amendment.**

Respectfully submitted,



Peter G. Pappas
Reg. No. 33205

SUTHERLAND ASBILL & BRENNAN LLP
999 Peachtree Street, NE
Atlanta, Georgia 30309-3996
Telephone: (404) 853-8000
Facsimile: (404) 853-8806

Attorney Docket No.: 20524-0002